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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,871	10/24/2003	Richard R. Dickson	00-714.1	1952

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CATERPILLAR INC.
100 N.E. ADAMS STREET
PATENT DEPT.
PEORIA, IL 616296490

EXAMINER

FAYYAZ, NASHMIYA SAQIB

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

8m

Office Action Summary	Application No. 10/692,871	Applicant(s) DICKSON ET AL.	
	Examiner Nashmiya S. Fayyaz	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-25, 27-44 and 46-52 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 14-24, 27, 29-44, 46 and 48-52 is/are rejected.
 7) ☒ Claim(s) 25, 28 and 47 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. Claims 14-24, 27, 34-44 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendren et al. (PG Pub # U.S. 2003/0136177). As to claims 14 and 34, Hendren et al disclose an emission sampling apparatus including a dilution tunnel 20 connected with exhaust with inlet 17 with a sampling system 70/72/74 , exhaust 11 of engine 12, flow control valve 28, second mass flow controller 36, filter 34 with a dilution air control arrangement or means for controlling dilution air 42/50 including a constant mass flow stream exiting through fixed flow rate pump 29 and a variable flow stream exiting from solenoid valve 28, see figs. 1-2. Further, it is noted that a mass flow controller, per se is not designated by Hendren et al. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to have designated the computer controlled solenoid valve 28 with pump 29 as a mass flow controller as it performs the function of controlling the flowrate. As to claims 15 and 35, designation of the second mfc as a master controller and the first mfc as the slave appears evident in the design of operation. As to claim 16, note the layout/depiction of fig. 2. As to claims 17 and 36, note probe 15. As to claims 18 and 38, Hendren et al disclose usage of ambient air but lacks usage of "scrubbed" or filtered air. Official notice is taken that the expediency of scrubbing or filtering is old and well-known in the art of dilution to further purify the air.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included an indication that the air is scrubbed and filtered in order to avoid the inclusion of extraneous particles causing inaccurate results. As to claims 19-20 and 39-41, note flow measuring device 40 and pressure sensors as in par. 56-57 indicating a laminar element. As to claims 21 and 42, note system control computer 50 which allows for receiving and recording of data from the sensors and to control of various functions by an adjustable parameter in the controlling software which invariably will include some form of a selectable gain circuit. As to claims 22-23 and 43-44, since various readings from one or more sensors may be used, it is possible to designate a single or a multiple channel input and since the computer provides input and output commands which has plural input channels. As to claim 24, note pump 24. As to claims 27 and 46, Hendren discloses a valve 28 which is connected to fixed flow rate pump 29 but lacks usage of a critical flow venturi. Official notice is taken that it is old and well-known that a venturi can be used to control the flowrate to a fixed rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the fixed rate pump with a critical flow venturi as an alternative to fix the flow rate of the constant mass flow stream. As to claim 37, the probe is not designated as a "square root extractor". However, in accordance with applicant's remarks 3/10/05, it is recognized that the differential pressure produced by the moving

fluid across the probe is proportionate to the square of the velocity of the fluid and therefore, it is necessary to extract the square root of this difference in pressures in order to obtain a reading which is directly proportionate to the velocity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have designated the probe 15 as a "square root extractor".

2. Claims 29-33 and 48-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendren et al in view of Waldbusser- U.S. Patent # 6,138,708. As to claims 29-33 and 48-52, Hendren et al lack a teaching for provision of a dome loaded valve and a mass flow transducer. However, in a related prior art device, Waldbusser discloses a mass flow controller system including a pressure regulator 24 serially connected to a dome loaded regulator 22 and a pressure transducer 28, see Fig. 1. Therefore, inclusion of such a mass flow controller system would have been obvious to one of ordinary skill in the art at the time of the invention to have included in order to have automatic pressure compensation, see Abstract. As to claims 30-31 and 49-50, note microprocessor controller 26 in combination with control electronics 21. As to claims 32 and 51, note connection of controller 26 to pressure regulator 24 connected to dome 23 of dome regulator 22. As to claims 33 and 52, as best understood, note output line 14.

3. Claims 33 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 33 and 52, "said critical flow venturi" lacks antecedent basis.

Allowable Subject Matter

4. Claims 25, 28 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Applicant's arguments with respect to claims 14-24, 27, 29-44, 46 and 48-52 have been considered but are moot in view of the new ground(s) of rejection. With regard to Applicant's argument that Hendren cannot and "does not divide the dilution air" into a constant flow that is connected with a variable mass flow stream, it is noted that such language is not found in the claims and the claims merely recite that a constant and variable flow stream are included and nothing more.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nashmiya S. Fayyaz whose telephone number is 571-272-2192. The examiner can normally be reached on Mondays and Thursdays.

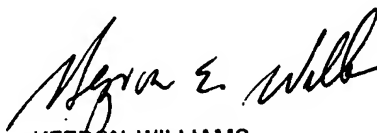
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



NFayyaz
Examiner
Art Unit 2856

nf
5/23/05



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SUPERVISORY PATENT EXAMINER
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